

S
14.65:
IP 81
C. 3

Geol Survey



STATE OF ILLINOIS

DEPARTMENT OF REGISTRATION AND EDUCATION

PHYSICAL PROPERTIES OF ILLINOIS CRUDE OIL-PART II

W. J. Armon
T. F. Lawry
R. F. Mast

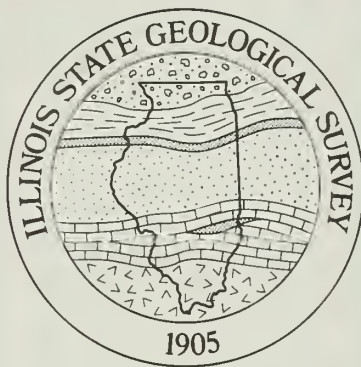
FEB 25 1999

FEB 25 1999

IL GEOL SURVEY

ILLINOIS PETROLEUM 81

ILLINOIS STATE GEOLOGICAL SURVEY
1966 URBANA, ILLINOIS



LIBRARY

PHYSICAL PROPERTIES OF

ILLINOIS CRUDE OIL —

PART II

W. J. Armon, T. F. Lawry, R. F. Mast

ILLINOIS STATE GEOLOGICAL SURVEY

Urbana, Illinois


Illinois Petroleum 81

1966

LIBRARY

FEB 25 1999

IL GEOL SURVEY



Digitized by the Internet Archive
in 2012 with funding from
University of Illinois Urbana-Champaign

<http://archive.org/details/physicalproporti81armo>

PHYSICAL PROPERTIES OF ILLINOIS CRUDE OIL.—

PART II

W. J. Armon, T. F. Lawry, R. F. Mast

ABSTRACT

Basic data on physical properties of Illinois crude oils, including API gravity at 60° F, viscosity at 50°, 77°, and 100° F, and interfacial tension against distilled water at 77° F, are presented in tabular form. More than 500 samples of oil were analyzed. The samples were taken from producing wells located south of the base line to the third principal meridian. The base line extends roughly from south of Belleville through Mt. Carmel, Illinois.

Samples were collected from pay zones in Pennsylvanian, Mississippian, Devonian, Silurian, and Ordovician strata.

INTRODUCTION

The need for fundamental data on the physical properties of reservoir fluids and on the role these properties play in oil recovery becomes more urgent as research in petroleum technology expands. The lack of such data is particularly felt in areas such as the Illinois Basin where primary recovery is diminishing and secondary and tertiary operations are increasing.

An Illinois State Geological Survey project has produced such information about the physical properties of Illinois crude oils. The data collected and presented in this report have many applications. They could be used in studying flow of fluids through reservoirs, in correlating the physical properties of the crude oils with their geologic occurrence, in determining relationships between physical properties and effectiveness of waterflooding, in predicting physical characteristics of a crude oil

from its geologic occurrence, and in predicting how reservoirs would react to specific recovery methods. A comprehensive compilation of the fundamental facts gathered here also could be of great value in reservoir engineering calculations concerned with primary, secondary, and tertiary recovery of Illinois crude oil.

The project was begun by Paul A. Witherspoon. Samples have been collected by many members of the Geological Survey staff over a period of several years. Data for samples from producing wells located north of the base line to the third principal meridian were published in Illinois Petroleum 78 (Armon et al., 1964).

In order to compile a report as comprehensive as possible, all pool-pay combinations of over 200 productive acres were studied, and appropriate single-zone well completions were sought with the assistance of operators within each field. In all but a few pools, suitable wells were located for sampling. In a few cases multiple-zone completions in an entire pool have made it impossible to locate good single-zone samples for study.

At the beginning of this study, an effort was made to obtain samples from wells that were still in some stage of primary depletion to avoid introduction of unknown factors as a result of secondary recovery. In the later phases of the study, large-scale waterflood development of many pools made it impossible to procure samples under primary depletion conditions. Rather than eliminate interesting pay zones from the report, we chose samples from appropriate single-zone wells whether they were part of a waterflood or not.

SAMPLING PROCEDURE

Selection of an appropriate well for sampling was made by one of two methods:

- I. Records in the Geological Survey were consulted to find single-pay and non-waterflood wells, the sample was taken, and the operator was asked to verify the status of the well as to pay zone and depth for the date the well was sampled.
- II. Operators of a pool were asked to consult their records to suggest a particular single-zone completion being sought for sampling. After this information had been received, samples were taken as soon as possible, and Geological Survey records were checked to verify the producing zone.

In a few instances, confirmation had not been received from the operator at the time of publication, and information as to depth and pay are submitted on the basis of Survey records only.

Approximately 850 samples were collected, which represent the majority of the significant oil-producing formations in the state. Part I of this study reported on 344 of these; this report includes approximately 500 samples. The samples are from the area south of the base line to the third principal meridian. The base line nearly bisects the Illinois Basin and runs approximately from Belleville to Mt. Carmel.

The samples from the south half of the Illinois Basin were collected from the following pay zones:

1. Pennsylvanian--Jake Creek, Bridgeport, Mansfield, Biehl, Buchanan, basal Pennsylvanian129
2. Chesterian--Degonia, Clore, Palestine, Waltersburg, Tar Springs, Hardinsburg, Cypress, Sample, Bethel, Paint Creek, Benoist, Renault.157
3. Valmeyeran--Aux Vases, Ohara, Spar Mountain, McClosky, St. Louis, Salem, Harrodsburg202
4. Devonian--Lingle, Dutch Creek, Clear Creek. 6
5. Silurian. 8
6. Ordovician--Trenton 5

Samples for analysis were collected in half-gallon glass jugs from bleeder valves or, in exceptional cases, from stock tanks at the well sites. At wells where production was a mixture of oil and water, a glass water-oil separator was used in which oil and water, as pumped from the well, were allowed to stand until separation was complete. The water was drained from the bottom of the separator, additional oil and water were added, water was again drained, and the process was repeated until a sufficient oil sample was collected. Agitation and exposure of samples to air were kept to a minimum.

Samples were sealed and delivered to the Illinois Geological Survey analytical laboratory for analysis.

ANALYTICAL PROCEDURE

The physical characteristics determined for the crude oil were: (1) specific gravity, (2) viscosity, and (3) interfacial tension between crude oil and distilled water.

Specific gravity was determined at 50°, 77°, and 100° F (temperature controlled within $\pm 0.1^\circ\text{F}$) by the glass hydrometer method. Determined specific gravity was converted to specific gravity at 60° F and then to API gravity at 60° F using ASTM-IP Petroleum Measurement Tables (ASTM Comm. D-2, 1953).

Viscosities were determined as kinematic viscosities at 50°, 77°, and 100° F ($\pm 0.1^\circ\text{F}$) with the Ostwald-Fenske type of viscometer, in which the time required for a standard volume of oil to flow through a capillary is measured in seconds and converted to viscosity in centistokes by use of appropriate calibration factors. The centistoke reading was converted to centipoise by multiplying the centistoke reading by the oil density at the temperature under consideration. Viscosity calibrations were made using National Bureau of Standards liquid viscosity standards (ASTM Comm. D-2, 1953).

Interfacial tension values of crude oil against distilled water were made at 77° F ($\pm 0.1^\circ$ F) with the DuNouy tensiometer equipped with a platinum-iridium ring. The procedure involved measurements under non-equilibrium conditions. Interfacial tension values of crude oil against water may indicate the presence of compounds having a strong affinity for water (ASTM Comm. D-2, 1953).

When the interfacial tension of a sample was very low (below about 20 dynes/cm), it is probable that a chemical had been injected down-hole or at the well head to break up emulsions or to control corrosion. From some of these samples we were actually able to verify the fact that a chemical was being used in the well from which the sample was taken. The engineer who uses the data given here will, of course, recognize that any chemical added to the produced crude oil can appreciably change the interfacial tension.

PHYSICAL PROPERTIES OF ILLINOIS
CRUDE OIL

On the following pages, the analytical
data derived from the study of the crude
oil samples are presented in tabular form

LIBRARY

FEB 25 1999

IL GEOL SURVEY

PHYSICAL PROPERTIES OF ILLINOIS CRUDE OIL

Pool and pay	Location		Spot	Producing zone (ft)	API gravity	Inter-facial tension (dynes per cm)	Viscosity (Cp)			Date sampled	Sam-ple from	Lab. no.	Re-marks
	County	Sec.-T.-R.					100°F	77°F	50°F				
Ab Lake W Waltersburg	Gallatin	NW SW SE	2023-2045	36.6	27.4	4.02	5.52	9.96	9-6-62	B.V.*	0-1335	1	
	30-8S-10E												
Aden C Aux Vases	Wayne	SE SW NW	3190-3214	38.8	32.6	3.44	4.62	7.51	8-21-62	B.V.	0-1275	1	
	33-2S-7E												
Aden C Salem	Wayne	C SE NW	3740-3754	36.4	28.9	5.06	7.38	12.48	8-21-62	B.V.	0-1276	1	
	33-2S-7E												
Aden S McClosky	Hamilton	NE SW NE	3400-3410	37.0	25.3	5.02	7.21	12.74	8-21-62	B.V.	0-1277	1	
	30-3S-7E												
Aden S McClosky	Hamilton	SE NE NE	3390-3404	38.8	33.7	4.31	5.81	9.63	4-15-65	B.V.	0-1399	1	
	30-3S-7E												
Akin Cypress	Franklin	SE SE NW	2844-2872	33.2	33.2	6.91	10.40	19.31	5-7-65	B.V.	0-1420	1	
	23-6S-4E												
Akin Aux Vases	Franklin	SW SW SW	3107-3124	37.0	29.8	4.68	6.91	17.30	5-7-65	B.V.	0-1421	1	
	25-6S-4E												
Akin Chara	Franklin	SW SW NE	3143-3155	38.4	36.2	4.07	5.57	9.64	8-23-62	B.V.	0-1298	1	
	26-6S-4E												
Akin W Chara	Franklin	670'SL, 730'EL, NW NE	3038-3042	37.4	33.1	4.36	6.03	10.11	10-14-65	B.V.	0-1461	1	
	20-6S-4E												
Akin W McClosky	Franklin	660'SL, 60'EL, SE SE	3106-3108	39.4	31.8	2.47	3.22	4.66	8-23-62	B.V.	0-1297	1	
	17-6S-4E												

Akin W Harrdsburg	Franklin 20-6S-4E	NW NW SW	3957-3963 3997-4001	37.2	32.5	3.56	4.84	8.07	10-14-65	B.V.	0-1475	1
Albion Cen Chara	Edwards 5-2S-10E	NE NE SE	3314-3321	36.8	30.9	4.29	6.12	10.63	8-17-61	B.V.	0-1057	2
Albion C Mansfield	Edwards 1-3S-10E	SE SE SW	1649-1654	28.0	36.2	15.20	25.46	51.78	9-19-61	B.V.	0-1089	1
Albion C Bridgeport	Edwards 13-2S-10E	380'EL, 990'SL, SW	1578-1596	28.9	25.5	17.72	29.49	111.12	9-18-61	S.T.*	0-1086	1
Albion C Biehl	Edwards 14-3S-10E	NE SW SE	1906-1913	37.8	37.6	4.55	5.72	10.11	8-18-61	B.V.	0-1065	1
Albion C Biehl	Edwards 30-2S-11E	NW SE SW	1973-1977	37.4	26.0	4.50	6.07	10.39	4-29-65	B.V.	0-1407	1
Albion C Waltersburg	Edwards 6-2S-14W	NE NW NE	2252-2258	36.0	32.6	5.07	7.94	15.28	9-18-61	B.V.	0-1075	1
Albion C Cypress	White 34-3S-10E	NE SW NE	2842-2859	37.2	35.9	4.31	5.77	9.86	9-26-61	B.V.	0-1096	1
Albion C Benoist	Edwards 15-3S-10E	SE NE SE	3012-3018	34.0	27.0	6.21	8.76	17.31	9-19-61	S.T.	0-1088	1
Albion C Paint Creek	White 22-3S-10E	490'NL, 330'WL, NW NE	2911-2925	35.4	35.5	5.36	7.01	12.10	9-19-61	B.V.	0-1087	1
Albion C Aux Vases	Edwards 1-2S-10E	SE SE SE	3032-3040	38.0	38.0	3.64	4.97	7.71	9-18-61	B.V.	0-1084	1
Albion C Aux Vases	Edwards 6-2S-11E	SE SE SE	2994-3017	36.4	30.8	4.54	6.14	10.71	9-18-61	B.V.	0-1076	1

Pool and pay	Location			Producing zone (ft)	API gra- vity	Inter- facial tension (dynes per cm)	Viscosity (cp)			Date sampled	Sam- ple from	Lab. no.	Re- marks
	County	Sec.-T.-R.	Spot				100°F 77°F 50°F						
Albion C Spar Mountain	Edwards	32-1S-14W	NW SW NW	3091-3102	38.2	27.2	3.31	4.51	6.76	11-5-65	B.V.	0-1482	1
Albion C McClosky	Edwards	7-2S-11E	379'SL, 1782'WL, SW	3138-3142	37.4	36.7	4.10	5.69	8.51	9-18-61	B.V.	0-1085	1
Albion E Cypress	Edwards	29-2S-14W	SW NW NE	2815-2829	31.9	26.3	8.19	12.56	39.37	9-18-61	S.T.	0-1082	1
Albion E Bethel	Edwards	28-2S-14W	NW NE NW	2895-2903	37.6	33.8	3.98	5.42	8.43	9-18-61	B.V.	0-1079	1
Albion E Renault	Edwards	20-2S-14W	NE NW SE	2942-2950	37.8	37.1	4.29	5.98	12.48	9-18-61	B.V.	0-1081	1
Albion E Aux Vases	Edwards	29-2S-14W	SW SW NE	3014-3023	34.0	33.4	6.15	8.80	18.06	9-18-61	B.V.	0-1083	1
Ashley Benoist	Washington	33-2S-1W	300'SL, 330'EL, NW SW	1448-1456	30.0	32.8	10.10	15.72	38.33	6-28-61	B.V.	0-983	1
Baldwin Silurian	Randolph	7-4S-6W	NW SW SE	1570-1635	32.1	26.5	7.51	11.22	49.76	6-28-61	S.T.	0-972	1
Barnhill Aux Vases	Wayne	34-2S-8E	SW SE NW	3264-3274	38.6	32.1	3.59	4.85	10.52	3-16-62	B.V.	0-1271	1
Barnhill McClosky	Wayne	26-2S-8E	SW SW SW	3353-3358 3394-3403	37.8	11.7	3.76	5.13	8.55	10-15-65	B.V.	0-1455	1
Barnhill McClosky	Wayne	4-3S-8E	--	3491-3496	37.6	--	4.52	--	--	--	--	0-253	3

Beaucoup Clear Creek	Washington 10-2S-2W	NE NE SW	3070-3080	38.6	25.1	4.18	5.82	7.72	6-27-61	B.V.	0-971	1
Beaucoup S Benoist	Washington 33-2S-2W	SW NE SE	1427-1435	35.0	32.5	5.46	7.87	17.86	6-28-61	B.V.	0-982	1
Belle Prairie McClosky	Hamilton 2-4S-6E	C S/2 SE NW	3403-3410	38.2	33.3	4.39	6.40	10.76	9-2-65	B.V.	0-1443	1
Bellmont Chara	Wabash 31-1S-13W	NW SW NW	2836-2844	40.2	35.7	2.78	3.72	4.26	8-3-61	B.V.	0-1003	1
Belle Rive McClosky	Jefferson 27-3S-4E	660'WL, 560'SL, NE NE	3078-3088	36.6	33.7	5.52	7.82	14.09	10-13-65	B.V.	0-1470	1
Benton Tar Springs	Franklin 35-6S-2E	NE NE SE	2101-2149	37.8	31.7	3.78	5.11	8.47	9-23-64	B.V.	0-1360	1
Benton Aux Vases	Franklin 35-6S-2E	SE SW NE	2750-2762	38.4	30.7	3.29	4.68	7.83	9-23-64	B.V.	0-1359	1
Benton N Cypress	Franklin 25-5S-2E	NE NE SW	2456-2464	34.8	14.6	5.43	7.91	14.79	11-11-64	B.V.	0-1382	1
Benton N Bethel	Franklin 1-6S-2E	NE SW SW	2585-2601	38.4	--	3.56	--	--	--	--	0-307	3
Benton N Aux Vases	Franklin 11-6S-2E	NE SE NE	2718-2726	39.0	--	3.55	--	--	--	--	0-304	3
Benton N Chara	Franklin 1-6S-2E	NE NE-NW	2736-2740	37.8	35.3	3.49	4.69	7.35	9-3-65	B.V.	0-1447	1
Benton N Spar Mountain	Franklin 11-6S-2E	SE NE NE	2789-2794	36.2	32.7	4.45	6.44	11.05	10-14-65	B.V.	0-1464	1

Pool and pay	Location			Producing zone (ft)	API gravity	Inter-facial tension (dynes per cm)	Viscosity (Cp)			Date sampled	Sample from	Lab. no.	Remarks
	County	Sec.-T.-R.	Spot				100°F	77°F	50°F				
Benton N McClosky	Franklin	25-5S-2E	SE SW SW	34.4	2822-2832	31.6	5.32	7.72	14.96	10-14-65	B.V.	0-1476	1
Blairsville W McClosky	Hamilton	18-4S-7E	NW NW SW	37.4	3413-3425	29.5	4.28	5.93	9.62	8-22-62	B.V.	0-1279	1
Bluford McClosky	Jefferson	22-2S-4E	SE SW SW	37.6	3069-3072	35.0	3.86	5.24	8.91	10-13-65	B.V.	0-1469	2
Bone Gap C Waltersburg	Edwards	18-1S-14W	SW NW NW	32.8	2310-2318	35.5	7.16	10.63	32.25	8-17-61	B.V.	0-1059	1
Bone Gap C Cypress	Edwards	19-1S-14W	NE NE SE	37.0	2709-2722	35.8	3.98	5.38	7.76	8-17-61	B.V.	0-1063	1
Bone Gap C Bethel	Edwards	18-1S-14W	NE SE SW	38.8	2875-2891	33.4	4.26	5.84	8.18	8-17-61	B.V.	0-1060	1
Bone Gap C Chara	Edwards	19-1S-14W	NE NE NW	34.4	3054-3060	12.0	7.37	10.71	28.44	8-17-61	B.V.	0-1062	1
Bone Gap C Spar Mountain	Edwards	18-1S-14W	NW SW SE	35.2	3050-3055	37.1	6.62	9.75	20.16	8-17-61	B.V.	0-1061	2
Bone Gap C McClosky	Edwards	18-1S-11E	SW SE NW	37.8	3198-3204	37.6	4.53	6.32	9.21	8-17-61	B.V.	0-1058	1
Boyd Benoist	Jefferson	19-1S-2E	830'NL, 780'WL, NW	34.6	2054-2073	30.6	5.06	7.17	14.08	4-14-65	B.V.	0-1400	1

Boyd Aux Vases	Jefferson 19-1S-2E	NE SW NE	2127-2143	39.2	36.4	3.41	4.50	7.54	9-23-64	B.V.	0-1365	1
Browns Cypress	Edwards 28-1S-14W	SE SW SW	2726-2741	35.6	36.3	6.19	8.02	14.31	9-18-61	B.V.	0-1074	1
Browns Cypress	Edwards 33-1S-14W	NW NE NE	2639-2650	35.8	36.5	5.89	7.75	12.70	9-16-61	B.V.	0-1073	1
Browns Chara	Wabash 27-1S-14W	NW NE SW	2992-3020	34.2	32.8	5.82	8.12	15.32	9-16-61	B.V.	0-1069	1
Browns McClosky	Wabash 33-1S-14W	NW SE NE	2994-2998	37.8	31.5	3.80	5.18	8.08	11-11-65	B.V.	0-1489	
Browns E Cypress	Wabash 11-2S-14W	NE SW SE	2583-2594	35.6	36.6	5.51	7.62	13.20	9-16-61	B.V.	0-1072	1
Bungay C Renault	Hamilton 16-4S-7E	SW SW NW	3256-3266	37.6	33.8	4.18	5.77	10.64	8-22-62	B.V.	0-1280	1
Bungay C Aux Vases	Hamilton 15-4S-7E	NW SW SW	3285-3309	38.6	35.8	3.79	5.15	8.67	8-22-62	B.V.	0-1281	1
Bungay C McClosky	Hamilton 20-4S-7E	315'SL, 330'WL, SE NW	3396-3435	34.4	32.8	7.15	10.88	21.04	5-7-65	B.V.	0-1423	1
Burnt Prairie S Chara	White 7-4S-9E	SE NE NW	3417-3423	38.0	35.1	3.39	4.60	7.58	10-2-61	B.V.	0-1171	1
Carmi Cypress	White 24-5S-9E	NE NE SW	2813-2818	37.0	34.8	4.58	6.28	21.08	10-4-61	B.V.	0-1221	1
Carmi Aux Vases	White 35-5S-9E	NW NE NW	3035-3055	36.2	32.7	4.21	5.83	11.28	10-4-61	B.V.	0-1225	1

Pool and pay	Location		Spot	Producing zone (ft)	API gravity	Inter-facial tension (dynes per cm)	Viscosity (Cp)			Date sampled	Sample from	Lab. no.	Remarks
	County	Sec.-T.-R.					100°F	77°F	50°F				
Carmi McClosky	White	26-5S-9E	SE NE SE	3134-3138 3145-3149	35.0	34.2	4.57	6.42	11.07	10-4-61	B.V.	0-1224	1
Carmi N Aux Vases	White	3-5S-9E	SW NW SW	3226-3240	36.2	36.8	4.73	6.63	17.97	10-3-61	B.V.	0-1216	1
Centerville Chara	White	2-4S-9E	SW SE NW	3369-3371	38.0	36.5	3.46	4.71	7.34	10-2-61	B.V.	0-1173	1
Centerville Chara	White	2-4S-9E	C N/2 NE SW	3372-3373	37.2	35.4	3.68	5.11	8.30	10-2-61	B.V.	0-1172	1
Centerville E Tar Springs	White	7-4S-10E	NE NE SW	2535-2545	37.6	34.6	3.54	4.75	7.55	10-3-61	B.V.	0-1179	1
Centerville E Cypress	White	7-4S-10E	SW SW NW	2931-2936 2944-2953	37.4	37.0	4.05	5.58	9.49	10-3-61	B.V.	0-1178	1
Centerville E Bethel	White	17-4S-10E	382'NL, 330'WL, SW NW	2970-2995	38.2	37.2	3.71	5.19	8.22	10-3-61	B.V.	0-1208	2
Christopher S Aux Vases	Franklin	1-7S-1E	NW NW SE	2620-2628	38.2	33.5	3.71	5.00	8.67	10-14-65	B.V.	0-1466	1
Clay City C Tar Springs	Wayne	17-2S-8E	SE SE SW	2558-2574	38.0	28.2	4.22	5.88	10.24	3-16-62	B.V.	0-1270	1
Clay City C Cypress	Wayne	11-1S-8E	C NE SE	2725-2733	36.2	34.8	9.89	15.61	46.36	11-5-65	B.V.	0-1484	1
Clay City C Aux Vases	Wayne	8-1S-8E	SW NW SE	3087-3091	38.6	31.9	3.51	4.67	7.56	11-5-65	B.V.	0-1485	1

Clay City C Chara	Wayne 8-2S-7E	SW NW NW	3274-3286	38.2	31.9	3.47	4.67	7.53	10-15-65	B.V.	0-1453	1
Clay City C St. Louis	Wayne 8-1S-8E	SW NE SW	3255-3261	38.2	30.5	3.19	4.24	6.65	11-5-65	B.V.	0-1486	1
Clay City C McClosky	Wayne 2-1S-8E	NE NE SE	3087-3115	38.6	34.1	3.32	4.43	7.00	11-5-65	B.V.	0-1483	1
Coil Aux Vases	Wayne 18-1S-5E	NW NE SE	2959-2960	39.2	34.9	3.31	4.36	7.27	4-15-65	B.V.	0-1393	1
Coil W Aux Vases	Jefferson 14-1S-4E	SW SW SW	2704-2716	39.4	29.1	3.35	4.38	12.21	8-24-62	B.V.	0-1314	1
Concord C Tar Springs	White 28-6S-10E	NE SE NW	2261-2291	35.8	35.1	4.27	5.88	11.10	11-15-61	B.V.	0-1260	1
Concord C Hardinsburg	White 11-6S-10E	SW NW SW	2514-2536	36.0	35.3	4.11	5.34	11.22	11-14-61	B.V.	0-1256	1
Concord C Cypress	White 16-6S-10E	NW SE NE	2644-2659	37.6	16.9	4.14	5.60	12.01	11-14-61	B.V.	0-1257	1
Concord C Aux Vases	White 28-6S-10E	1060'NL, 330'WL, NW NE	2900-2918	35.6	31.7	4.81	6.64	12.61	4-29-65	B.V.	0-1409	1
Concord C McClosky	White 21-6S-10E	NE NW NE	2980-2987 3030-3044	36.8	31.8	4.03	5.51	8.75	11-14-61	B.V.	0-1259	1
Concord E Cypress	White 2-7S-10E	NE NW NE	2549-2557	38.4	30.0	3.60	4.61	8.75	11-15-61	B.V.	0-1264	1
Cordes Benoist	Washington 23-3S-3W	SW NW NW	1258-1290	35.6	33.2	4.99	7.00	13.40	4-14-65	B.V.	0-1394	1

Pool and pay	Location		Producing zone (ft)	API gravity	Inter-facial tension (dynes per cm)	Viscosity (Cp)			Date sampled	Sample from	Lab. no.	Remarks
	County	Spot				Viscosity (Cp)						
						100°F	77°F	50°F				
Corinth Aux Vases	Williamson 21-8S-4E	SW SE SW	2878-2900	38.0	33.3	3.78	5.31	8.93	9-7-62	B.V.	0-1341	1
Coulterville N Silurian	Washington 35-3S-5W	NE SE NE	2300-2326	41.7	31.4	2.22	3.18	4.31	6-28-61	B.V.	0-973	2
Covington S McClosky	Wayne 14-2S-6E	C NW NW	3316-3317.5	33.8	23.4	6.11	8.86	20.92	11-3-65	S.T.	0-1480	1
Covington S St. Louis	Wayne 14-2S-6E	C SE SW	3373-3375	35.6	33.5	5.59	8.07	14.74	9-2-65	B.V.	0-1444	1
Covington S Harrodsburg	Wayne 14-2S-6E	C SE NW	4148-4165	35.6	31.8	6.26	8.89	15.94	5-7-65	B.V.	0-1424	1
Cravat Benoist	Jefferson 9-1S-1E	SW NE NE	2075-2089	34.4	30.1	5.65	8.39	16.63	6-28-61	S.T.	0-986	1
Cravat W Pennsylvanian	Jefferson 6-1S-1E	330'NL, 440'WL, SW SE	921-928	34.2	35.4	8.53	12.86	24.64	11-10-64	B.V.	0-1376	1
Cravat W Pennsylvanian	Jefferson 7-1S-1E	SW SW NE	1088-1092	30.8	34.9	12.34	19.57	46.75	11-10-64	B.V.	0-1377	1
Cravat W Pennsylvanian	Jefferson 6-1S-1E	NW NW SE	1303-1331	34.2	33.5	6.34	9.15	20.00	11-10-64	B.V.	0-1375	1
Crossville W Aux Vases	White 22-4S-10E	330'NL, 360'WL, SE SW	3019-3027	34.8	36.9	5.15	7.41	15.52	9-28-61	B.V.	0-1165	1
Crossville W Ohara	White 15-4S-10E	SW SW SE	3118-3126	36.5	36.7	4.64	6.03	11.60	9-28-61	B.V.	0-1166	1

Crossville W McClosky	White 15-4S-10E	SW SE SW	3187-3191	37.8	36.7	3.96	5.26	9.52	9-28-61	B.V.	0-1167	1
Dahlgren McClosky	Hamilton 28-3S-5E	SW NE NE	3305-3313	36.6	32.9	4.26	6.03	11.58	9-2-65	B.V.	0-1446	1
Dale C Tar Springs	Hamilton 18-6S-7E	330'NL, 985'WL, SE	2373-2401	33.0	N.D.*	27.94	N.D.	N.D.	8-22-62	B.V.	0-1288	1
Dale C Hardinsburg	Hamilton 7-6S-7E	SE NE NW	2480-2498	37.6	31.8	4.28	5.88	9.41	8-22-62	B.V.	0-1287	1
Dale C Cypress	Hamilton 6-6S-7E	SE NE SW	2660-2682 2725-2793	38.6	34.7	3.56	4.83	7.68	9-2-65	B.V.	0-1441	1
Dale C Bethel	Hamilton 36-5S-6E	NE SW SE	2954-2973	38.4	29.5	3.89	5.24	8.46	8-27-62	B.V.	0-1286	1
Dale C Aux Vases	Hamilton 11-6S-6E	NW SE SW	3092-3129	36.6	32.0	4.72	6.58	13.00	11-11-64	B.V.	0-1384	1
Dale C McClosky	Hamilton 17-6S-6E	SE NE SE	3278-3288	37.2	29.9	4.30	5.93	11.93	4-15-65	B.V.	0-1395	1
Dale C McClosky	Hamilton 27-5S-6E	C N/2 SE NW	3144-3153	34.8	33.0	4.93	7.07	12.32	9-2-65	B.V.	0-1442	1
Deering City Aux Vases	Franklin 9-7S-3E	160'SL, 440'EL, NW NW	2798-2823	38.2	34.3	3.42	4.60	8.53	11-12-65	B.V.	0-1499	1
Deering City McClosky	Franklin 16-7S-3E	75'SL, 290'EL, NW NW	2913-2917	33.8	32.7	6.67	9.52	17.48	11-12-65	B.V.	0-1500	2
Divide C Aux Vases	Jefferson 17-1S-4E	SE SW SE	2652-2672	38.0	31.9	3.71	4.97	9.62	8-24-62	B.V.	0-1313	1

Pool and pay	Location			Producing zone (ft)	API gravity	Inter facial tension (dynes per cm)	Viscosity (Cp)			Date sampled	Sam-ple from	Lab. no.	Re-marks
	County	Sec.-T.-R.	Spot				100°F	77°F	50°F				
Divide C Spar Mountain	Jefferson	23-1S-3E	SE SW SE	2690-2702	37.8	36.0	3.81	5.15	10.23	9-3-65	B.V.	0-1450	1
Divide C McClosky	Jefferson	21-1S-4E	NW SE NE	2771-2778	37.2	29.3	4.55	6.59	11.41	8-21-62	B.V.	0-1312	1
Divide C McClosky	Jefferson	27-1S-3E	SW NW NW	2754-2787	36.0	28.3	4.26	5.77	11.29	8-23-62	B.V.	0-1308	1
Divide C St. Louis	Jefferson	24-1S-3E	SE SW SE	2867-2876	36.8	27.0	3.82	5.36	9.95	8-24-62	B.V.	0-1311	1
Divide C Salem	Jefferson	26-1S-3E	700'SL, 330'EL, NE NE	3184-3208	36.8	33.0	4.21	6.03	10.60	8-23-62	B.V.	0-1309	1
Divide S McClosky	Jefferson	6-2S-4E	SW SE NW	2838-2842	34.0	25.4	6.48	9.63	19.79	11-20-64	S.T.	0-1391	1
Dubois Cen Benoist	Washington	33-3S-1W	100'NL, 480'WL, SE NW	1333-1338	29.7	34.6	9.66	14.69	26.95	9-23-64	B.V.	0-1366	1
Dubois C Cypress	Washington	17-3S-1W	NE SE NW	1204-1209 1222-1228	37.4	36.2	4.69	6.09	12.32	9-23-64	B.V.	0-1367	1
Dubois C Benoist	Washington	20-3S-1W	NE SW NW	1374-1378	30.4	33.2	8.98	13.72	24.74	5-6-65	B.V.	0-1415	1
Eldorado C Palestine	Saline	20-8S-7E	SW NE NW	1923-1934 1946-1952	36.2	33.7	4.96	7.03	14.22	9-5-62	B.V.	0-1326	1
Eldorado C Waltersburg	Saline	15-8S-7E	SW NW NE	2122-2128	38.4	33.4	3.18	4.26	6.75	7-22-59	B.V.	0-774	1

Eldorado C Tar Springs	Saline 20-8S-7E	360' NL, 330' WL, NE NW	2199-2201 2207-2213	36.8	29.4	5.23	7.48	14.22	9-5-62	B.V.	0-1327	1
Eldorado C Hardinsburg	Saline 16-8S-7E	350' SL, 200' WL, NW NW	2352-2370	38.2	34.1	3.95	5.26	13.51	9-5-62	B.V.	0-1328	2
Eldorado C Cypress	Saline 15-8S-7E	NW NE NW	2589-2598	37.0	36.3	3.80	5.14	8.92	9-5-62	B.V.	0-1325	1
Eldorado C Aux Vases	Saline 16-8S-7E	NW NE NW	2906-2912	37.0	29.2	5.51	7.25	13.40	11-11-65	B.V.	0-1496	1
Eldorado E Aux Vases	Saline 23-8S-7E	NE NE SW	2890-2898	38.4	33.7	3.92	5.42	9.95	9-5-62	B.V.	0-1324	1

Elkville Benoist	Jackson 22-7S-1W	C SE SW	2000-2011	35.8	--	6.23	--	--	--	--	0-285	3
Ellery E Aux Vases	Edwards 34-2S-10E	NE NW NW	3198-3206	39.2	35.0	3.03	4.02	7.61	9-19-61	B.V.	0-1093	1
Ellery E Ohara	Edwards 34-2S-10E	NE SE NW	3258-3262	36.8	31.6	3.53	4.88	7.55	11-3-65	B.V.	0-1481	1
Enfield Aux Vases	White 32-5S-8E	NE NE NW	3243-3256	39.4	32.3	3.67	5.12	12.30	8-22-62	B.V.	0-1283	1
Enfield McClosky	White 29-5S-8E	C S/2 SE NE	3376-3384	38.8	29.4	3.02	4.08	6.57	8-22-62	B.V.	0-1282	1

Enfield McClosky	White 29-5S-8E	SW NE SE	3414-3423	36.6	31.8	3.70	5.15	9.21	11-12-65	B.V.	0-1506	2
Ewing McClosky	Franklin 4-5S-3E	SE NW SE	2970-2978	38.6	19.8	3.20	4.46	7.76	8-22-62	B.V.	0-1290	1

Pool and pay	Location		Producing zone (ft)	API gravity	Inter-facial tension (dynes per cm)	Viscosity (Cp)			Date sampled	Sample from	Lab. no.	Remarks
	County	Sec.-T.-R.				100°F	77°F	50°F				
Goldengate C Cypress	Wayne	32-2S-9E	NW NW NW	36.2	36.2	5.03	6.75	12.07	8-15-61	B.V.	0-1045	1
Goldengate C Bethel	Wayne	23-2S-9E	SE NW SE	37.4	36.5	3.46	4.68	7.74	8-15-61	B.V.	0-1046	1
Goldengate C Aux Vases	Wayne	7-3S-9E	NE NW NE	39.6	38.0	3.47	4.65	7.15	8-15-61	B.V.	0-1044	1
Goldengate C Ohara	Wayne	23-2S-9E	SW SW SW	39.0	32.8	3.42	4.61	6.64	8-16-61	B.V.	0-1047	1
Goldengate C Spar Mountain	Wayne	7-3S-9E	SE SE SW	38.4	37.4	3.71	5.11	8.45	8-15-61	B.V.	0-1043	2
Goldengate C Spar Mountain	Wayne	20-2S-9E	SW SW SE	37.2	35.8	4.64	6.45	11.91	10-15-65	B.V.	0-1454	1
Goldengate C McClosky	White	29-3S-9E	NW SW NW	36.6	37.5	5.19	7.24	13.16	8-15-61	B.V.	0-1042	1
Goldengate C McClosky	White	28-3S-9E	W/2 NE SE	35.4	33.4	6.12	8.81	16.53	11-12-64	B.V.	0-1390	1
Goldengate C Harrodsburg	Edwards	5-3S-10E	C SW NW	38.6	27.9	2.45	3.52	7.27	8-18-64	B.V.	0-1353	1
Goldengate C Dutch Creek	Wayne	32-2S-9E	NE NE NE	39.4	33.9	3.72	5.23	10.61	1-23-62	S.T.	0-1139	1
Goldengate N C Aux Vases	Wayne	16-2S-9E	SE NE NW	38.6	38.1	3.78	5.18	6.86	8-16-61	B.V.	0-1049	1

Goldengate N C Aux Vases	NE NW NW	3324-3332	36.6	33.9	4.23	5.89	8.69	8-16-61	B.V.	0-1048	1
Goldengate N C McClosky	NW SE NW	3392-3403	39.2	32.8	3.50	4.74	8.45	11-11-65	B.V.	0-1488	1
Half Moon Aux Vases	SE SE SW	3199-3218	38.0	39.5	6.06	7.94	21.74	8-17-61	B.V.	0-1055	1
Half Moon Ohara	SE SE NE	3274-3284	39.6	32.1	3.60	4.95	8.04	8-17-61	B.V.	0-1056	1
Half Moon McClosky	NW SE NW	3308-3317	34.4	35.1	5.92	8.64	16.80	8-16-61	B.V.	0-1050	1
Half Moon McClosky	C N/2 SW SE	3292-3302	39.6	35.5	3.25	4.22	6.36	8-16-61	B.V.	0-1051	1
Harco Aux Vases	SE NE NE	2883-2895	40.6	27.2	3.19	4.23	6.68	5-7-65	B.V.	0-1422	1
Harco Spar Mountain	NE SW SW	2967-2974	38.8	31.6	3.69	4.97	7.73	9-7-62	B.V.	0-1342	1
Harco E Cypress	SW SE SW	2855-2863	37.8	32.9	3.56	4.83	7.80	9-7-62	B.V.	0-1344	1
Harco E Aux Vases	NE NW NW	2864-2872	38.2	33.1	3.91	5.42	8.78	9-7-62	B.V.	0-1343	1
Harrisburg Waltersburg	SW NE NE	2044-2051	38.4	27.3	4.39	6.08	10.55	7-22-59	B.V.	0-790	1
Herald C Pennsylvanian	NE SE NW	1420-1451	36.4	28.8	4.48	6.12	9.45	11-15-61	B.V.	0-1265	1

Pool and pay	Location			Producing zone (ft)	API gravity	Inter-facial tension (dynes per cm)	Viscosity (Cp)			Date sampled	Sam-ple from	Lab. no.	Re-marks
	County	Sec.-T.-R.	Spot				100°F	77°F	50°F				
Herald C Waltersburg	White	33-6S-9E	SE NW NE	2357-2378	33.4	32.1	5.94	8.26	14.66	7-22-59	B.V.	0-768	1
Herald C Waltersburg	White	28-6S-9E	SE SE SE	2360-2374	33.0	30.4	5.52	8.13	14.81	7-21-59	B.V.	0-784	1
Herald C Tar Springs	Gallatin	21-7S-9E	NW NE NE	2271-2305	37.8	8.2	3.90	5.33	8.89	4-29-65	B.V.	0-1411	1
Herald C Cypress	Gallatin	21-7S-9E	NE NE NW	2620-2665	33.4	29.9	5.43	7.69	14.37	4-15-65	B.V.	0-1396	1
Herald C Bethel	White	29-6S-9E	SE SW SE	2890-2905	37.2	31.2	3.84	5.10	9.31	11-16-61	B.V.	0-1268	1
Herald C Aux Vases	Gallatin	24-7S-9E	NW NE NW	2932-2947	38.0	35.4	3.45	4.70	10.23	9-1-65	B.V.	0-1437	1
Herald C McClosky	White	11-7S-9E	SW SE NW	2981-2987	35.0	32.4	5.22	6.25	11.12	10-15-65	B.V.	0-1457	1
Herrin Cypress	Williamson	21-8S-2E	NE SW NW	2211-2219	38.2	38.2	3.80	5.19	7.92	10-15-65	B.V.	0-1460	2
Hoyleton W Clear Creek	Washington	16-1S-2W	280'SL, 330'WL, NE SE	2892-2901	39.0	27.2	3.17	4.25	8.68	6-27-61	B.V.	0-970	1
Ina Renault	Jefferson	23-4S-2E	SE SW NE	2644-2648	35.8	35.0	4.45	6.22	11.30	10-14-65	B.V.	0-1473	1
Ina McClosky	Jefferson	23-4S-2E	NW SE SE	2772-2782	34.6	33.1	5.22	7.60	14.52	10-14-65	B.V.	0-1474	1

Ina St. Louis	Jefferson 25-4S-2E	NE SE NW	3044-3050	37.0	32.0	3.73	5.07	8.49	11-12-65	B.V.	0-1501	1
Ina St. Louis	Jefferson 25-4S-2E	NE NW NE	3002-3007	36.4	--	4.06	--	--	--	--	0-241	3
Inman E C Waltersburg	Gallatin 22-8S-10E	SW SW SW	1980-2004	37.2	30.8	3.74	5.12	8.26	7-1-59	B.V.	0-776	1
Inman E C Tar Springs	Gallatin 11-8S-10E	SW SW NE	2053-2073	36.8	32.9	3.99	5.45	8.94	9-1-65	B.V.	0-1432	1
Inman E C Cypress	Gallatin 2-8S-10E	SW SW SW	2404-2418	34.4	32.7	4.82	6.79	11.47	9-1-65	B.V.	0-1431	1
Inman E C Aux Vases	Gallatin 34-7S-10E	NE NW SW	2738-2744	36.8	29.4	3.66	4.97	8.46	11-11-65	B.V.	0-1494	1
Inman E C McClosky	Gallatin 11-8S-10E	729'SL, 664'EL, NE	2765-2794	39.0	29.3	3.14	4.28	7.11	9-22-64	B.V.	0-1361	1
Inman W C Palestine	Gallatin 19-8S-10E	SE NW SE	1828-1848	29.9	25.5	10.87	17.94	42.11	9-6-62	B.V.	0-1337	1
Inman W C Tar Springs	Gallatin 13-8S-9E	NE SE SW	2128-2141	35.6	33.1	4.39	6.29	10.67	9-1-65	B.V.	0-1433	1
Inman W C Hardinsburg	Gallatin 7-8S-10E	210'SL, 380'WL, NW NE	2261-2270	32.1	38.5	6.31	8.73	14.50	9-1-65	B.V.	0-1436	1
Inman W C Cypress	Gallatin 11-8S-9E	NW NW SE	2499-2520	36.8	28.2	3.79	5.26	9.39	9-6-62	B.V.	0-1340	1
Inman W C Aux Vases	Gallatin 2-8S-9E	SE NW SW	2876-2881	36.6	17.4	4.52	6.26	15.35	11-5-65	S.T.	0-1487	2

Pool and pay	County	Location		Producing zone (ft)	API gravity	Inter-facial tension (dynes per cm)	Viscosity (Cp)			Date sampled	Sample from	Lab. no.	Remarks
		Sec.-T.-R.	Spot				100°F	77°F	50°F				
Inman W C Spar Mountain	Gallatin	25-8S-9E	NE NW NW	2803-2811	38.0	--	3.77	--	--	--	--	0-217	3
Irvington Cypress	Washington	10-1S-1W	SE SW NW	1366-1381	36.0	31.2	4.32	5.97	10.31	4-14-65	B.V.	0-1397	1
Irvington Benoist	Washington	23-1S-1W	50'NL, 330'EL, NE SW	1537-1546	37.4	32.0	3.71	5.05	8.37	11-10-64	B.V.	0-1378	1
Irvington Clear Creek	Washington	23-1S-1W	NW NW NW	3133-3145	38.0	27.7	5.16	7.04	13.40	8-18-64	B.V.	0-1354	1
Irvington Trenton	Washington	26-1S-1W	360'NL, 330'EL, NE NW	4289-4373	38.8	27.0	4.63	6.72	18.30	-56	B.V.	0-678	1
Irvington W Cypress	Washington	28-1S-1W	SE NE SW	1461-1468	35.6	35.0	5.36	7.59	14.58	11-12-65	B.V.	0-1504	2
Irvington E Benoist	Jefferson	31-1S-1E	NW SW NE	1941-1947	37.2	29.5	3.90	5.47	9.08	8-18-64	B.V.	0-1355	2
Johnston City Aux Vases	E Williamson	15-8S-3E	SE NW NW	2623-2631	36.0	36.4	5.11	7.07	12.97	10-15-65	B.V.	0-1472	1
Johnston City Aux Vases	E Williamson	15-8S-3E	NE SW NW	2620-2630	36.4	38.3	4.70	6.47	11.64	11-12-65	B.V.	0-1500	1
Johnsonville Aux Vases	C Wayne	28-1S-6E	688'SL, 330'EL, SW NE	3038-3055	37.4	33.8	3.86	5.31	9.33	5-7-65	B.V.	0-1425	1
Johnsonville Chara	C Wayne	28-1N-6E	C N/2 NE NW	3144-3150	38.0	32.1	3.40	4.58	7.22	5-7-65	B.V.	0-1427	1

Johnsonville C McClosky	Wayne 33-1S-6E	C W/2 SE NE	3156-3211	37.6	32.0	3.60	4.91	8.73	5-7-65	B.V.	0-1426	1
Johnsonville S Aux Vases	Wayne 14-1S-6E	SW NE NW	3046-3069	37.8	30.0	3.86	6.76	18.89	8-21-62	B.V.	0-1274	1
Junction Waltersburg	Gallatin 16-9S-9E	NW SW SW	1780-1804	37.4	31.3	3.93	5.36	8.55	7-22-59	B.V.	0-775	1
Junction E Waltersburg	Gallatin 36-8S-9E	SW SE SW	2002-2016	37.2	27.6	3.87	5.41	9.16	7-22-59	B.V.	0-791	1
Junction N Pennsylvanian	Gallatin 33-8S-9E	NW SW SE	1561-1573	35.6	30.7	5.02	6.69	11.66	11-11-65	B.V.	0-1495	2
Keensburg S Mansfield	Wabash 10-3S-13W	SE SW NE	1157-1162	32.5	36.1	7.37	11.10	27.79	8-3-61	B.V.	0-1001	1
Keensburg S Pennsylvanian	Wabash 34-2S-13W	NE NE NW	1189-1198	33.0	35.5	7.09	10.90	21.36	8-3-61	B.V.	0-1000	1
Keensburg S Cypress	Wabash 27-2S-13W	SE SE SW	2404-2416	36.4	35.2	6.48	9.63	11.56	8-3-61	B.V.	0-999	1
Keenville Aux Vases	Wayne 28-1S-5E	280'NL, 380'EL, SW SE	2971-2975	35.6	35.2	4.87	6.67	12.25	9-22-64	B.V.	0-1363	1
Keenville McClosky	Wayne 28-1S-5E	420'NL, 104'WL, NE SE	3114-3129	37.2	32.1	3.99	5.47	8.65	9-22-64	B.V.	0-1364	1
Kellerville Silurian	Adams 2-2S-5W	SE NE NE	620-625	36.8	32.4	4.52	6.42	12.60	2-16-60	B.V.	0-777	1
King Aux Vases	Jefferson 33-3S-3E	370'NL, 340'EL, SE NE	2747-2761	39.0	34.8	3.43	4.66	7.71	11-11-64	B.V.	0-1387	1

Pool and pay	Location		Spot	Producing zone (ft)	API gravity	Inter-facial tension (dynes per cm)	Viscosity (cp)			Date sampled	Sample from	Lab. no.	Remarks
	County	Sec.-T.-R.					100°F	77°F	50°F				
Lexington Cypress	Wabash	26-1S-14W	NE SE SW	2587-2594	31.5	35.1	10.10	15.46	40.82	9-16-61	B.V.	0-1071	1
Lexington McClosky	Wabash	26-1S-14W	SE SE NW	2966-2977	38.4	32.9	3.64	4.89	7.42	9-16-61	B.V.	0-1070	1
Locust Grove S Chara	Wayne	17-1S-9E	NW SE SW	3248-3254	39.0	31.2	3.14	4.21	7.00	8-16-61	B.V.	0-1053	1
Locust Grove S Spar Mountain	Wayne	8-1S-9E	SW SE SW	3302-3312	37.4	26.9	4.09	5.70	10.42	8-17-61	S.T.	0-1054	1
Locust Grove S McClosky	Wayne	17-1S-9E	SE SE SW	3290-3297	38.8	36.0	4.22	5.79	8.25	8-16-61	B.V.	0-1052	1
- 24 -													
Long Branch Aux Vases	Saline	20-7S-6E	405'NL, 330'EL, NE SE	3075-3086	37.4	32.0	3.97	5.43	8.29	9-7-62	B.V.	0-1267	1
Lynchburg McClosky	Jefferson	8-3S-4E	NW SE NW	3040-3046	38.0	31.3	4.61	6.33	11.37	8-23-62	B.V.	0-1301	1
McKinley Benoist	Washington	20-3S-4W	NW SE SE	1090-1094	40.9	31.5	2.28	2.92	4.61	6-28-61	B.V.	0-974	1
McKinley Benoist	Washington	20-3S-4W	SE SW SE	1060-1090	41.9	35.9	2.10	2.68	3.93	6-28-61	B.V.	0-975	1
McKinley Silurian	Washington	29-3S-4W	365'SL, 365'WL, NW NE	2234-2244	39.4	26.1	2.55	3.41	5.12	8-4-64	B.V.	0-1350	1
Marissa W Cypress	Randolph	4-4S-7W	NE NE NW	214-250	25.0	27.6	41.73	80.86	224.60	11-22-61	N.A.*	0-1090	1

Markham City N Aux Vases	Jefferson 13-2S-4E	960'NL, 330'WL, SE SE	2953-2961	38.0	31.3	5.53	7.97	13.58	8-23-62	B.V.	0-1304	1
Markham City N Aux Vases	Jefferson 13-2S-4E	NE SW SE	2966-2968	38.2	9.7	3.87	7.81	13.33	10-13-65	B.V.	0-1468	1
Markham City N McClosky	Jefferson 13-2S-4E	660'SL, 686'WL, SW SE	3098-3117	36.4	32.7	5.48	7.72	13.10	11-3-65	B.V.	0-1479	1
Markham City W Aux Vases	Jefferson 4-3S-4E	SE NE SW	2918-2941	38.8	34.1	3.98	5.31	9.72	8-23-62	B.V.	0-1303	1
Markham City W McClosky	Jefferson 9-3S-4E	NE SE NE	3047-3054	37.4	28.4	4.51	6.84	12.24	8-23-62	B.V.	0-1302	1
Markham City W McClosky	Jefferson 34-2S-4E	660'SL, 990'EL, NE SE	3050-3059	36.8	34.4	4.52	6.35	11.95	9-2-65	B.V.	0-1445	1
Maunie E Aux Vases	White 6-6S-11E	483'NL, 330'EL, SW	2870-2880	35.0	33.9	4.63	6.24	13.83	10-25-61	B.V.	0-1249	1
Maunie N C Pennsylvanian	White 24-5S-10E	370'SL, 370'WL, SW SE	1326-1342	24.7	35.9	42.91	82.54	413.41	10-24-61	B.V.	0-1244	1
Maunie N C Waltersburg	White 19-5S-14W	NE SE SW	2314-2321	37.2	31.8	3.47	4.75	7.84	10-24-61	B.V.	0-1240	1
Maunie N C Tar Springs	White 19-5S-14W	SW NE SW	2344-2351	34.8	35.3	4.90	6.45	10.38	10-24-61	N.A.	0-1248	1
Maunie N C Bethel	White 25-5S-10E	SW SW NW	2802-2812	34.8	33.3	4.41	6.02	10.94	10-24-61	B.V.	0-1247	1
Maunie N C Aux Vases	White 25-5S-10E	NE NE NW	2924-2948	35.6	35.5	4.07	5.58	10.48	10-24-61	B.V.	0-1245	1

Pool and pay	Location		Producing zone (ft)	API gravity	Inter-facial tension (dynes per cm)	Viscosity (Cp)			Date sampled	Sample from	Lab. no.	Remarks
	County	Spot				100°F	77°F	50°F				
Maunie N C Chara	White 26-5S-10E	SW NE NE	3024-3029	36.6	33.1	3.52	4.78	7.89	10-24-61	B.V.	0-1246	1
Maunie N C Spar Mountain	White 19-5S-11E	330'SL, 1650'WL, SE	3016-3046	35.6	31.5	4.26	5.79	10.99	10-24-61	B.V.	0-1242	1
Maunie N C McClosky	White 25-5S-10E	NW NE NE	3073-3084	33.0	31.2	5.44	7.82	15.15	10-24-61	B.V.	0-1243	1
Maunie S C Bridgeport	White 7-6S-11E	SW SW SW	1329-1335	24.3	30.2	35.76	67.13	N.D.	10-25-61	B.V.	0-1252	1
Maunie S C Blehl	White 26-6S-10E	225'SL, 330'EL, SE NE	1644-1659	31.1	36.2	10.17	15.69	31.05	10-25-61	B.V.	0-1253	1
Maunie S C Degonia	White 25-6S-10E	NW NW NW	1897-1909	35.4	28.5	4.53	6.09	10.37	10-25-61	B.V.	0-1254	1
Maunie S C Palestine	White 24-6S-10E	NW SE NE	2010-2024	34.8	28.5	4.50	6.04	11.28	11-15-61	S.T.	0-1262	1
Maunie S C Tar Springs	White 13-6S-10E	NW NE NE	2207-2211	36.8	33.7	3.73	5.02	8.04	10-25-61	B.V.	0-1251	1
Maunie S C Cypress	White 18-6S-11E	330'NL, 561'WL, NE SW	2601-2614	36.2	34.5	4.29	5.94	11.69	10-25-61	B.V.	0-1255	1
Maunie S C Aux Vases	White 12-6S-10E	SE SE NE	2852-2862	34.8	21.9	4.75	6.66	17.02	10-25-61	B.V.	0-1250	1
Maunie S C Mayberry McClosky	Wayne 8-3S-6E	318'NL, 654'WL, NE NE	3336-3346	38.8	32.4	3.43	4.57	7.19	11-12-65	B.V.	0-1505	1

Mill Shoals Aux Vases	White 20-3S-8E	SW SW NE	3277-3287	35.8	32.1	5.09	7.20	16.55	4-15-65	B.V.	0-1398	1
Mill Shoals McClosky	White 17-3S-8E	SW SE SW	3414-3422	36.0	34.7	5.46	7.43	12.79	10-15-65	B.V.	0-1456	1
Mitchellsville Waltersburg	Saline 15-10S-6E	SW NE NE	1503-1509	37.6	31.2	4.36	6.06	12.33	3-1-61	B.V.	0-949	1
Mt. Carmel Biehl	Wabash 5-1S-12W	290'NL, 330'EL, NE NW	1517-1540	35.8	34.9	6.49	8.73	13.85	8-2-61	B.V.	0-998	1
Mt. Carmel Tar Springs	Wabash 18-1S-12W	NE SW NE	1811-1819	35.8	32.6	4.30	5.85	10.37	4-29-65	B.V.	0-1405	1
Mt. Carmel Cypress	Wabash 8-1S-12W	NW NE SE	1996-2011	38.0	27.0	3.88	5.35	9.50	4-29-65	B.V.	0-1406	1
Mt. Carmel Ohara	Wabash 7-1S-12W	SE SW NE	2314-2331	35.4	35.1	6.36	9.82	21.18	8-2-61	B.V.	0-994	1
Mt. Carmel Spar Mountain	Wabash 5-1S-12W	NW NE SE	2333-2339	38.8	28.2	2.74	3.56	5.50	11-11-65	B.V.	0-1490	2
Mt. Carmel McClosky	Wabash 5-1S-12W	NE SE NW	2295-2305	36.6	36.4	6.19	6.82	14.01	8-3-61	B.V.	0-997	1
Mt. Vernon Aux Vases	Jefferson 18-3S-3E	SW NE NE	2677-2689	35.8	31.0	4.54	6.38	12.90	8-23-62	B.V.	0-1300	1
Mt. Vernon McClosky	Jefferson 6-3S-3E	NE SW NE	2801-2808	39.0	30.0	3.18	4.30	7.18	5-6-65	B.V.	0-1416	1
Nason Ohara	Jefferson 35-3S-2E	NW SE SE	2758-2762	36.8	14.7	4.02	5.65	10.04	11-12-65	B.V.	0-1502	1
Nason Spar Mountain	Jefferson 1-4S-2E	NW NW NW	2805-2810	37.4	35.2	3.55	4.81	7.65	10-14-65	B.V.	0-1463	2

Pool and pay	Location		Producing zone (ft)	API gravity	Inter-facial tension (dynes per cm)	Viscosity (Cp)			Date sampled	Sample from	Lab. no.	Remarks
	County	Sec.-T.-R.				100°F	77°F	50°F				
New Harmony C Biehl	Wabash	10-1S-13W	NW SE NW	33.2	29.7	6.92	10.09	18.29	8-6-61	B.V.	0-1014	1
New Harmony C Degonia	Wabash	8-2S-13W	NE SW SW	34.4	35.5	5.36	7.66	13.69	8-7-61	B.V.	0-1024	1
New Harmony C Palestine	Wabash	3-1S-13W	SE NE SW	23.3	19.6	61.98	126.90	329.80	8-6-61	S.T.	0-1015	1
New Harmony C Waltersburg	Wabash	34-1S-13W	NE NW SE	35.8	35.0	4.69	9.32	19.78	8-7-61	B.V.	0-1021	1
New Harmony C Waltersburg	White	4-5S-14W	NW SE SW	36.8	23.4	3.58	4.93	8.12	7-21-59	B.V.	0-781	1
28												
New Harmony C Tar Springs	Wabash	17-1S-13W	SW SW NW	31.0	16.6	10.82	16.77	101.30	8-6-61	B.V.	0-1017	1
New Harmony C Cypress	Wabash	21-1S-13W	NW NW SE	34.4	36.3	5.84	10.38	19.10	8-5-61	B.V.	0-1012	1
New Harmony C Cypress	Wabash	21-1S-13W	SE SW SW	35.0	36.6	9.17	13.93	19.85	8-6-61	B.V.	0-1013	2
New Harmony C Sample	Wabash	17-2S-13W	333' NL, 114' EL, SE	35.6	37.2	5.18	6.46	10.97	8-3-61	B.V.	0-1002	1
New Harmony C Bethel	Wabash	26-1S-13W	SW SW SW	36.2	35.0	4.61	9.26	17.89	8-7-61	B.V.	0-1023	1
New Harmony C Bethel	Wabash	16-1S-13W	NW NW SW	38.0	36.9	3.71	7.00	12.16	8-7-61	B.V.	0-1018	1

New Harmony C Aux Vases	Wabash 4-1S-13W	NE SE NW	2963-2967	34.2	36.0	5.08	7.58	13.96	8-7-61	B.V.	0-1019	1
New Harmony C Aux Vases	Wabash 34-1S-13W	NE SW SW	2556-2564	38.0	34.9	3.39	6.58	11.64	8-7-61	B.V.	0-1022	1
New Harmony C Ohara	Wabash 18-1S-13W	NW NW SW	2828-2835	39.4	28.1	3.83	5.30	6.68	8-6-61	B.V.	0-1016	1
New Harmony C Spar Mountain	Wabash 26-1S-13W	330'SL, 405'WL, NE	2599-2611	38.4	35.2	3.69	5.04	7.78	8-7-61	B.V.	0-1025	1
New Harmony C McClosky	Wabash 23-1S-13W	SW SW NE	2597-2607	37.4	31.9	4.08	5.75	9.13	8-7-61	B.V.	0-1020	1
New Harmony C Harrodsburg	Wabash 27-4S-14W	C SW SE	3754-3808	36.2	36.5	4.24	5.97	11.74	9-28-61	B.V.	0-1164	1
New Harmony S Waltersburg	White 29-5S-14W	SW SE NE	2254-2279	35.2	31.4	4.42	5.94	10.70	10-24-61	B.V.	0-1241	2
New Haven C Tar Springs	White 19-7S-11E	SW SW NW	2118-2128	37.6	31.9	3.33	4.48	7.36	9-1-65	B.V.	0-1430	1
New Haven C Cypress	White 19-7S-11E	330'SL, 380'WL, NE SW	2438-2448	39.2	34.3	2.81	3.65	5.71	9-6-62	B.V.	0-1332	1
New Haven C Aux Vases	White 19-7S-11E	NE NE SW	2707-2725	38.4	35.2	3.24	4.36	7.08	9-6-62	B.V.	0-1331	1
New Haven C McClosky	White 24-7S-10E	SE SE NE	2866-2878	35.0	30.9	3.90	5.34	8.42	11-11-65	B.V.	0-1493	1
New Memphis Silurian	Clinton 4-1S-5W	NW NE NE	1910-2063	40.6	36.4	3.49	4.72	15.05	6-27-61	B.V.	0-967	1

Pool and pay	Location			Producing zone (ft)	API gravity	Inter-facial tension (dynes per cm)	Viscosity (Cp)			Date sampled	Sample from	Lab. no.	Remarks
	County	Sec.-T.-R.	Spot				100° F	77° F	50° F				
New Memphis E Devonian	Washington	6-1S-4W	SE SE NE	2179-2190	40.4	28.7	3.10	4.20	7.91	6-27-61	B.V.	0-968	1
Oakdale Aux Vases	Jefferson	14-2S-4E	SW SW NW	2863-2883	38.0	30.7	4.49	6.32	10.71	8-24-62	B.V.	0-1305	2
Oakdale McClosky	Jefferson	11-2S-4E	SW SW NE	2937-2948	36.6	33.7	4.82	6.77	12.03	10-13-65	B.V.	0-1467	1
Okawville Silurian	Washington	15-1S-4W	NE NE SE	2351-2367	39.8	12.5	3.46	4.67	14.15	6-27-61	B.V.	0-969	1
Omaha Jake Creek	Gallatin	3-8S-8E	NE NW NW	374-385	25.9	33.6	32.86	60.40	146.20	9-5-62	B.V.	0-1320	1
Omaha Pennsylvanian	Gallatin	4-8S-8E	SE NE NW	560-578	19.4	32.5	270.00	719.00	N.D.	9-5-62	B.V.	0-1323	1
Omaha Biehl	Gallatin	33-7S-8E	380' SL, 330' EL, SE SW	1320-1351	22.1	34.1	61.42	128.20	N.D.	9-5-62	B.V.	0-1321	1
Omaha Palestine	Gallatin	4-8S-8E	NW SE NW	1695-1707	26.8	21.9	20.23	35.28	80.42	9-1-65	B.V.	0-1434	1
Omaha Tar Springs	Gallatin	4-8S-8E	NE SW SW	1897-1927	27.0	--	19.35	--	--	--	--	0-257	3
Omaha Aux Vases	Gallatin	34-7S-8E	NW SE SE	2762-2772	40.2	34.5	3.10	4.08	6.53	9-5-62	B.V.	0-1319	1
Omaha Chava	Gallatin	32-7S-8E	NE SW SW	2738-2745	38.4	31.7	4.42	6.09	11.01	9-5-62	B.V.	0-1322	1

Omaha Chara	Gallatin 32-7S-8E	NW SW SE	2701-2705 2720-2726	39.2	33.3	3.78	5.20	9.23	9-1-65	B.V.	0-1435	1
Omaha E McClosky	Gallatin 2-8S-8E	NE SE NE	2886-2894 2898-2906	38.2	25.0	4.06	5.31	9.89	9-5-62	B.V.	0-1318	2
Omaha W Cypress	Saline 1-8S-7E	SE NW NE	2606-2625	36.8	30.1	4.24	6.11	11.10	9-5-62	B.V.	0-1317	1
Orient Aux Vases	Franklin 9-7S-2E	NE NE SW	2650-2674	38.4	36.2	3.63	4.80	8.48	9-3-65	S.T.	0-1452	1
Phillipstown C Bridgeport	White 30-4S-11E	550'NL, 90'EL, NE NW	1369-1380	36.0	34.6	4.48	6.26	10.59	9-28-61	B.V.	0-1162	1
Phillipstown C Pennsylvanian	White 25-4S-10E	SE SE NE	1346-1364	36.0	29.6	4.51	6.24	10.08	9-28-61	B.V.	0-1161	1
Phillipstown C Pennsylvanian	White 31-4S-14W	NW NW SW	2085-2100	37.0	35.2	4.28	5.90	8.94	9-22-64	B.V.	0-1370	1
Phillipstown C Buchanan	White 31-3S-14W	SE NW SE	1579-1599	29.5	35.6	12.52	20.43	42.30	9-27-61	B.V.	0-1157	1
Phillipstown C Biehl	White 31-3S-14W	SE NE NE	1819-1835	32.8	35.8	6.59	9.63	19.12	9-27-61	B.V.	0-1156	1
Phillipstown C Degonia	White 19-4S-11E	SW NE NW	1991-2013	35.8	35.7	4.84	6.50	11.97	9-28-61	B.V.	0-1163	1
Phillipstown C Waltersburg	White 31-3S-14W	NW SE SE	2268-2274	34.4	33.8	5.55	7.59	12.94	9-27-61	B.V.	0-1160	1
Phillipstown C Tar Springs	White 31-3S-14W	SW SE SE	2304-2322	35.2	34.5	5.17	7.16	13.00	9-27-61	B.V.	0-1159	1

Pool and pay	Location			Producing zone (ft)	API gravity	Inter-facial tension (dynes per cm)	Viscosity (cp)			Date sampled	Sample from	Lab. no.	Remarks
	County	Sec.-T.-R.	Spot				100°F 77°F 50°F						
							100°F	77°F	50°F				
Phillipstown C Cypress	White	19-3S-11E	SE SW SW	2707-2721	36.2	38.7	5.57	9.84	43.51	9-27-61	B.V.	0-1099	1
Phillipstown C Paint Creek	White	36-3S-10E	NE SE SE	2856-2870	37.4	30.7	4.27	5.87	10.77	9-27-61	B.V.	0-1102	1
Phillipstown C Bethel	White	25-3S-10E	SW SE SE	2913-2928	36.4	37.2	4.44	6.03	10.56	9-27-62	B.V.	0-1097	1
Phillipstown C Aux Vases	White	31-3S-14W	NE SW SE	2877-2896	37.4	37.3	4.07	5.57	10.33	9-27-61	B.V.	0-1158	1
Phillipstown C Aux Vases	White	2-5S-10E	SW NW NE	2982-2994	36.8	34.8	4.52	6.23	12.76	4-29-65	B.V.	0-1408	1
Phillipstown C Ohara	White	30-3S-11E	2310'NL, 2970'WL, NW	3008-3014	36.4	37.7	5.23	7.09	14.11	9-27-61	B.V.	0-1100	1
Phillipstown C McClosky	Edwards	18-3S-11E	380'NL, 330'EL, NW SW	3203-3213	33.8	27.9	6.07	9.04	16.94	11-11-65	B.V.	0-1491	1
Phillipstown S Aux Vases	White	11-5S-10E	NW SW SW	2981-2991	37.8	35.6	3.84	5.56	11.47	10-3-61	B.V.	0-1214	1
Pittsburg N Aux Vases	Williamson	23-8S-3E	NE SE NW	2579-2584	37.0	34.5	4.68	6.52	9.88	11-11-65	B.V.	0-1497	1
Posen Trenton	Washington	21-3S-2W	NE SE NE	3888-3935	36.6	19.2	5.79	7.63	15.63	6-28-61	B.V.	0-981	1
Pyramid Devonian	Washington	20-2S-1W	E/2 NW SW	3082-3083	36.2	34.0	4.14	5.83	10.52	11-12-65	B.V.	0-1503	2

Raleigh Cypress	Saline 35-7S-6E	SE SW SE	2530-2542	33.7	33.3	8.57	12.99	24.68	9-7-62	B.V.	0-1345	2
Raleigh Aux Vases	Saline 16-8S-6E	NE NE NE	2950-2970	38.4	30.0	4.00	5.80	9.42	9-5-62	B.V.	0-1329	1
Raleigh S Waltersburg	Saline 27-8S-6E	NW SW NW	2047-2057	38.8	29.9	3.33	4.51	7.23	3-23-60	B.V.	0-792	1
Raleigh S Aux Vases	Saline 20-8S-6E	NE SW NE	2855-2872	39.8	28.8	3.04	4.05	7.25	9-5-62	B.V.	0-1330	1
Reservoir McClosky	Jefferson 21-1S-3E	SW NE NW	2728-2730	37.0	35.4	4.06	5.63	10.04	8-24-62	B.V.	0-1307	1
Richview Cypress	Washington 2-2S-1W	NE NE NW	1462-1474	38.6	33.9	3.30	4.41	7.12	11-10-64	B.V.	0-1379	1
Roaches McClosky	Jefferson 22-2S-1E	NW SE SW	2203-2214	37.0	--	3.80	--	--	--	--	0-242	3
Roaches N Benoist	Jefferson 8-2S-1E	NW NE NW	1913-1920	37.8	33.2	3.63	4.91	8.35	11-19-64	B.V.	0-1369	1
Roaches N Spar Mountain	Jefferson 8-2S-1E	SE SE NW	2099-2103	34.2	27.3	5.68	8.06	21.28	11-12-64	B.V.	0-1386	1
Roaches N Trenton	Jefferson 8-2S-1E	645'NL, 664'EL, SE NW	4850-4993	42.3	28.2	2.63	3.43	11.66	11-20-64	B.V.	0-1392	1
Rochester Pennsylvanian	Wabash 12-2S-13W	85'SL, 115'WL, NE SW	1291-1307	31.7	34.7	8.34	12.62	42.24	8-2-61	B.V.	0-995	1
Rochester Waltersburg	Wabash 14-2S-13W	330'NL, 880'WL, NE	1919-1947	36.8	33.9	4.34	6.54	12.49	8-2-61	B.V.	0-996	1

Pool and pay	Location		Spot	Producing zone (ft)	API gravity	Inter-facial tension (dynes per cm)	Viscosity (Cp)			Date sampled	Sam-ple from	Lab. no.	Re-marks
	County	Sec.-T.-R.					100°F	77°F	50°F				
Roland C Pennsylvanian	White	28-5S-9E	SW SW SW	1929-1933	34.8	33.9	5.21	7.33	12.91	10-4-61	B.V.	0-1227	1
Roland C Clare	White	17-6S-9E	NE SE NW	1994-2000	36.2	31.6	5.65	6.00	10.04	4-29-65	B.V.	0-1414	1
Roland C Waltersburg	Gallatin	29-7S-8E	NE NE NW	2170-2186	31.0	30.6	7.37	10.99	22.38	7-21-59	B.V.	0-786	1
Roland C Waltersburg	White	15-7S-8E	581'SL, 636'WL, SE NW	2108-2220	31.1	31.1	7.32	11.34	22.12	7-21-59	B.V.	0-785	1
Roland C Waltersburg	Gallatin	21-7S-8E	NE SW SW	2134-2144	31.0	33.3	7.72	11.54	25.95	7-22-59	B.V.	0-770	1
Roland C Waltersburg	White	11-7S-8E	330'SL, 357'EL, NE SW	2167-2191	31.3	29.5	7.39	10.85	20.08	7-22-59	B.V.	0-769	1
Roland C Tar Springs	White	5-6S-9E	NW NE NE	2390-2397	35.4	32.5	4.57	6.35	10.64	10-4-61	B.V.	0-1228	1
Roland C Hardinsburg	White	24-6S-8E	SW NW SW	2518-2540	37.0	27.7	3.88	5.32	8.68	7-22-59	B.V.	0-789	1
Roland C Hardinsburg	White	31-5S-9E	SE NE NE	2626-2652	37.2	25.9	3.98	5.75	10.18	7-22-59	B.V.	0-788	1
Roland C Hardinsburg	White	8-6S-9E	SW NE NW	2578-2585	37.2	30.4	3.91	5.12	8.05	7-22-59	B.V.	0-772	1
Roland C Cypress	White	9-6S-9E	NW NW NW	2754-2758	36.2	30.9	4.37	5.83	10.42	11-16-61	B.V.	0-1266	

Roland C Faint Creek	White 7-6S-9E	SE SW SE	2807-2827	34.8	24.5	5.14	7.35	14.43	4-29-65	B.V.	0-1413	1
Roland C Bethel	White 12-7S-8E	SE NE NW	2739-2796	36.6	32.7	4.19	5.80	13.79	9-22-64	B.V.	0-1362	1
Roland C Bethel	White 32-5S-9E	268'SL, 268'WL, SW SW	2866-2877	36.6	33.1	4.20	5.69	11.34	10-4-61	B.V.	0-1229	1
Roland C Aux Vases	Gallatin 21-7S-8E	C NE NE	2947-2967	39.6	31.6	3.63	4.91	8.29	4-15-65	B.V.	0-1402	1
Roland C Aux Vases	White 12-7S-8E	330'NL, 360'EL, SW NE	2900-2910	38.0	31.9	3.72	5.08	10.77	4-29-65	B.V.	0-1412	1
Roland C Aux Vases	White 32-5S-9E	NW NE NE	3079-3085	37.0	33.5	4.11	5.68	10.14	11-13-65	B.V.	0-1507	1
Roland C Spar Mountain	White 29-5S-9E	E/2 SE SE	3175-3179	38.0	31.5	4.01	5.47	10.29	10-4-61	B.V.	0-1226	1
Roland C McClosky	White 23-6S-8E	SE NE SW	3083-3093	37.8	34.2	4.42	6.29	8.68	9-1-65	B.V.	0-1438	1
Rural Hill N Cypress	Hamilton 34-5S-5E	NE SE SE	2936-2946	35.8	33.2	4.77	6.49	11.19	8-23-62	B.V.	0-1299	1
St. Libory Silurian	St. Clair 29-1S-6W	SW NE SW	1834-1847	26.8	15.4	18.80	32.67	73.12	8-14-63	B.V.	0-1346	1
Salem C Benoist	Jefferson 4-1S-2E	SE NE NE	1956-1965	38.4	34.1	3.46	4.58	7.34	11-3-65	B.V.	0-1478	1
Salem C Aux Vases	Jefferson 4-1S-2E	430'SL, 680'EL, NE	2010-2037	37.0	34.1	3.98	5.43	9.69	11-3-65	B.V.	0-1477	1

Pool and pay	Location			Spot	Producing zone (ft)	API gravity	Inter-facial tension (dynes per cm)	Viscosity (Cp)			Date sampled	Sample from	Lab. no.	Remarks
	County	Sec.-T.-R.	100°F					77°F	50°F					
Sesser C Renault	Franklin	17-5S-2E	--	2670-2700	39.4	34.5	3.39	4.39	8.06	11-11-64	S.T.	0-1374	1	
Sesser C Aux Vases	Franklin	25-6S-1E	SE NW NE	2602-2614	38.0	35.6	3.63	4.97	8.53	11-11-64	B.V.	0-1380	1	
Storms C Pennsylvanian	White	28-5S-10E	430'SL, 330'EL, NE SW	1321-1335	28.6	33.8	15.29	25.18	62.63	10-23-61	B.V.	0-1231	1	
Storms C Biehl	White	21-5S-10E	SE SE SE	1863-1868	34.8	34.6	5.18	7.50	14.06	10-24-61	B.V.	0-1238	1	
Storms C Basal Pennsylvanian	White	32-5S-10E	SE SE SE	2085-2100	32.3	31.1	7.28	10.88	40.28	10-23-61	B.V.	0-1235	1	
Storms C Degonia	White	32-5S-10E	NW NW NW	2092-2103	34.8	35.6	5.16	7.17	11.96	10-24-61	B.V.	0-1237	1	
Storms C Clore	White	32-5S-10E	NW NE NE	2081-2092	34.8	25.5	5.44	7.17	12.31	9-2-65	B.V.	0-1439	1	
Storms C Palestine	White	22-5S-10E	SW SE NW	2144-2157	35.2	33.4	4.63	6.37	11.34	10-24-61	B.V.	0-1239	2	
Storms C Waltersburg	White	12-6S-9E	NW SW SE	2248-2262	32.8	29.0	5.97	8.65	16.37	7-21-59	B.V.	0-766	1	
Storms C Waltersburg	White	23-6S-9E	70'NL, 70'EL, NE SW NE	2238-2269	31.1	29.1	6.93	10.30	19.71	7-21-59	B.V.	0-779	1	
Storms C Waltersburg	White	1-6S-9E	SE SW NE	2302-2321	31.1	27.4	6.88	10.40	20.58	7-21-59	B.V.	0-780	1	

Storms C Tar Springs	White 28-5S-10E	NE SE SW	2355-2365	37.2	27.2	4.18	5.53	10.37	10-23-61	B.V.	0-1234	1
Storms C Cypress	White 23-6S-9E	SE NE NW	2634-2642	34.9	24.2	5.36	7.51	15.60	7-21-59	B.V.	0-778	1
Storms C Cypress	White 25-5S-9E	NE NE SW	2731-2737	33.6	33.9	6.00	8.77	17.25	10-4-61	B.V.	0-1222	1
Storms C Renault	White 32-5S-10E	SE SW SE	2989-2994	38.8	32.9	3.53	4.65	11.16	10-23-61	B.V.	0-1236	1
Storms C Aux Vases	White 31-5S-10E	NE SE NW	3009-3018	35.2	35.0	4.50	6.36	12.05	10-23-61	B.V.	0-1230	1
Storms C Chara	White 29-5S-10E	NW NW SE	3087-3103	34.6	28.4	5.22	6.78	12.25	11-11-65	B.V.	0-1492	2
Storms C Spar Mountain	White 36-5S-9E	SE NE SW	3148-3154	34.2	27.5	4.46	6.42	13.27	10-4-61	S.T.	0-1223	1
Sumpter Tar Springs	White 25-4S-9E	SW SW SE	2502-2508	37.0	38.2	4.55	6.29	11.12	10-2-61	B.V.	0-1174	1
Sumpter Hardinsburg	White 25-4S-9E	SW NW SE	2666-2674	36.2	23.4	5.15	7.54	16.21	7-22-59	B.V.	0-787	1
Sumpter Cypress	White 25-4S-9E	NW NE NE	2866-2873	37.0	37.3	4.66	6.43	11.90	10-2-61	B.V.	0-1175	1
Sumpter E Cypress	White 20-4S-10E	NE NE SE	2837-2843	37.2	38.2	4.30	5.88	10.96	10-2-61	B.V.	0-1177	1
Sumpter E Bethel	White 29-4S-10E	NW NE NE	2922-2934	34.6	35.8	4.99	7.25	13.63	10-3-61	B.V.	0-1209	1

Pool and pay	County	Location		Producing zone (ft)	API gravity	Inter-facial tension (dynes per cm)	Viscosity (Cp)			Date sampled	Sample from	Lab. no.	Remarks
		Sec.-T.-R.	Spot				100°F	77°F	50°F				
Sumpter E Aux Vases	White	SE NE NW		3011-3021	39.2	35.6	3.17	4.93	9.66	10-3-61	B.V.	0-1212	1
Sumpter E Chara	White	NE NE NW		3131-3147	36.8	28.6	4.14	5.71	9.97	3-28-61	B.V.	0-923	1
Sumpter E Ohara	White	NE NE SW		3114-3124	35.6	32.7	4.36	6.43	10.97	10-3-61	B.V.	0-1211	1
Sumpter E Spar Mountain	White	SW SW NE		3165-3169	35.6	33.6	4.26	5.92	10.55	10-3-61	B.V.	0-1210	1
Sumpter E McClosky	White	SW SW SE		3149-3155	32.8	22.7	5.77	8.33	16.63	10-3-61	S.T.	0-1213	1
Sumpter N Aux Vases	White	NW NW NE		3180-3197	39.2	38.4	3.21	4.25	7.36	9-28-62	B.V.	0-1168	1
Sumpter S Tar Springs	White	SE SE SE		2595-2603	34.2	34.6	5.12	7.00	12.60	9-28-62	B.V.	0-1170	2
Sumpter S Aux Vases	White	330'SL, 380'EL, SE		3232-3237	35.8	13.2	3.94	7.18	16.28	9-28-62	B.V.	0-1169	1
Sumpter S Aux Vases	White	SW SW SW		3234-3240	35.6	32.2	4.87	6.95	12.65	11-12-64	B.V.	0-1385	2
Sumpter W Aux Vases	White	SE NW NE		3166-3170	34.8	33.0	5.99	9.69	25.36	10-2-61	S.T.	0-1176	1
Tamaroa Trenton	Perry	C NW SW		4135-4275	38.2	36.9	3.84	5.28	9.68	7-1-64	B.V.	0-1349	1

Tamaroa S Cypress	Perry 33-4S-1W	SW NW NW	1050-1162	28.0	36.4	15.86	26.25	54.80	6-28-61	B.V.	0-977	1
Tamaroa W Cypress	Perry 25-4S-2W	SE SW SE	1074-1080	33.6	37.8	7.17	10.67	30.13	6-28-61	B.V.	0-976	1
Taylor Hill Ohara	Franklin 9-5S-4E	SW SW SE	3059-3063	38.4	33.1	3.74	5.08	7.93	8-22-62	B.V.	0-1296	1
Thackeray Aux Vases	Hamilton 15-5S-7E	NW NW NW	3388-3405	36.6	28.6	4.97	6.89	12.51	8-22-62	B.V.	0-1284	1
Thackeray McClosky	Hamilton 10-5S-7E	NW NW NW	3492-3496	37.2	28.4	4.88	7.11	12.88	8-22-62	B.V.	0-1285	1
Thompsonville McClosky	Franklin 35-7S-4E	NW NW NW	3100-3113	37.8	--	4.39	--	--	--	--	0-252	3
Thompsonville N Aux Vases	Franklin 9-7S-4E	NW NW SE	3043-3067	35.2	35.6	5.58	8.12	16.28	9-23-64	B.V.	0-1371	1
Tilden Silurian	Randolph 16-4S-5W	NW NE NE	2217-2265	40.4	27.3	2.41	3.21	4.89	8-4-64	B.V.	0-1351	1
Trumbull C Cypress	White 18-5S-9E	330'SL, 1110'WL, SW SW	2852-2859	35.8	36.6	4.39	5.99	10.93	10-4-61	B.V.	0-1218	1
Trumbull C Aux Vases	White 19-5S-9E	NW NW NE	3149-3167	36.8	7.8	4.49	6.16	10.75	10-4-61	B.V.	0-1217	1
Trumbull C Ohara	White 25-5S-8E	330'SL, 380'WL, SW NW	3158-3162	36.2	35.1	4.93	6.63	11.99	9-2-65	B.V.	0-1440	1
Turkey Bend Trenton	Perry 10-4S-2W	NE NE NE	3956-3968	35.4	38.5	5.55	8.13	17.23	6-28-61	B.V.	0-978	1

Pool and pay	Location		API gravity	Producing zone (ft)	Spot	Interfacial tension (dynes per cm)	Viscosity (Cp)			Date sampled	Sample from	Lab. no.	Remarks
	County	Sec.-T.-R.					100°F	77°F	50°F				
Valier Aux Vases	Franklin	8-6S-2E		330'WL, SW SE	2667-2673	35.6	3.31	4.44	8.89	10-14-65	B.V.	0-1465	1
Walpole Tar Springs	Hamilton	27-6S-6E		679'WL, 330'WL, SW NW	2464-2472	29.9	4.62	6.57	11.74	8-22-62	B.V.	0-1289	1
Walpole Aux Vases	Hamilton	34-6S-6E		661'SL, 330'WL, NE NE	3075-3105	33.1	4.28	6.00	10.70	11-12-64	B.V.	0-1389	1
Waterloo Trenton	Monroe	35-1S-10W		250'SL, 200'WL, SW SW	410-425	--	13.47	--	--	--	--	0-231	3
West Frank- fort C Tar Springs	Franklin	19-7S-3E		SW NW SE	2056-2074	33.8	3.44	4.59	7.63	5-6-65	B.V.	0-1418	1
West Frank- fort C Aux Vases	Franklin	30-7S-3E		NW SW NE	2693-2713	38.0	3.52	4.73	8.49	9-23-64	B.V.	0-1372	1
West Frank- fort C Ohara	Franklin	24-7S-2E		40'SL, 230'WL, NE NE	2760-2768	38.0	4.44	6.17	11.93	5-6-65	B.V.	0-1419	1
West Frank- fort C Aux Vases	Franklin	6-7S-3E		330'SL, 545'WL, SW NW	2720-2728	39.2	3.28	4.31	8.27	11-12-65	B.V.	0-1508	2
Whittington Hardinsburg	Franklin	20-5S-3E		SW SW SW	2299-2305	38.0	3.76	5.22	9.03	11-11-64	B.V.	0-1381	1
Whittington Cypress	Franklin	21-5S-3E		SE SW NW	2530-2552	38.2	3.66	4.69	7.06	8-22-62	B.V.	0-1294	1

Whittington Aux Vases	Franklin 28-5S-3E	SW SW NW	2783-2789	38.0	26.8	3.59	4.92	7.91	8-22-62	B.V.	0-1292	1
Whittington Chara	Franklin 28-5S-3E	NW SW SW	2834-2840	37.2	31.6	5.60	6.30	10.71	5-6-65	B.V.	0-1417	1
Whittington McClosky	Franklin 21-5S-3E	SE SE SW	2911-2931	38.0	31.3	3.56	4.92	7.91	8-22-62	B.V.	0-1293	1
Whittington S Cypress	Franklin 4-6S-3E	NW NW NE	2576-2591	35.2	34.5	5.00	7.18	12.65	8-22-65	B.V.	0-1295	1
Whittington W Renault	Franklin 12-5S-2E	NW SE NW	2721-2729	37.4	36.5	3.94	5.42	10.09	9-3-65	B.V.	0-1449	1
Whittington W Aux Vases	Franklin 6-5S-3E	NW SE NW	2792-2798	38.4	37.8	3.64	4.96	9.09	9-3-65	B.V.	0-1448	1
Whittington W McClosky	Franklin 12-5S-2E	NW SW NW	2840-2841	37.8	30.8	3.95	5.33	8.99	10-14-65	B.V.	0-1462	1
Williams C Benoist	Jefferson 2-3S-2E	SW SW SW	2494-2502	38.6	35.3	3.47	5.12	10.68	11-11-64	B.V.	0-1388	1
Williams C Aux Vases	Jefferson 11-3S-2E	SW NW NW	2554-2558	36.8	33.3	4.36	6.22	13.45	11-11-64	B.V.	0-1383	1
Woodlawn Cypress	Jefferson 1-3S-1E	380'SL, 298'WL, NW NW	1763-1804	36.6	30.3	4.26	6.13	9.59	8-13-64	B.V.	0-1356	1
Woodlawn Benoist	Jefferson 1-3S-1E	330'NL, 763'WL, SW NW	1909-1955	38.2	34.0	3.33	4.44	7.80	4-15-65	B.V.	0-1401	1
Woodlawn Spar Mountain	Jefferson 35-2S-1E	380'NL, 330'EL, SE SE	2120-2144	37.6	27.6	3.89	4.96	8.47	8-18-64	B.V.	0-1357	1

Pool and pay	Location			Producing zone (ft.)	API gravity	Inter-facial tension (dynes per cm)	Viscosity (Cp)			Date sampled	Sample from	Lab. no.	Remarks
	County	Sec.-T.-R.	Spot				100°F	77°F	50°F				

Woodlawn Lingle	Jefferson	1-3S-1E	NE SW NW	3672-3676	36.8	32.5	5.94	8.56	21.78	8-18-64	B.V.	0-1358	1
-----------------	-----------	---------	----------	-----------	------	------	------	------	-------	---------	------	--------	---

Zeigler Aux Vases	Franklin	18-7S-2E	SW SW NW	2670-2700	37.4	37.0	4.09	5.46	9.58	9-3-65	B.V.	0-1451	1
-------------------	----------	----------	----------	-----------	------	------	------	------	------	--------	------	--------	---

SAMPLES FROM ADJACENT INDIANA POOLS

Caborn Waltersburg	Posey	17-6S-12W	NW SW SW	1850-1870	29.7	6.6	11.35	18.39	58.59	2-22-61	B.V.	0-944	1
--------------------	-------	-----------	----------	-----------	------	-----	-------	-------	-------	---------	------	-------	---

Hovey W Waltersburg	Posey	36-7S-15W	NE SW SW	2030-2045	37.2	27.5	3.88	4.90	14.17	2-22-61	B.V.	0-945	1
---------------------	-------	-----------	----------	-----------	------	------	------	------	-------	---------	------	-------	---

Mounts Waltersburg	Gibson	14-3S-12W	SE SE NE	1810-1830	29.3	23.7	11.36	18.21	60.94	2-22-61	B.V.	0-948	1
--------------------	--------	-----------	----------	-----------	------	------	-------	-------	-------	---------	------	-------	---

New Harmony Waltersburg	Posey	23-5S-14W	1111'NL, 1023'WL, NW	2125-2148	35.8	24.5	3.78	5.30	8.60	7-21-59	B.V.	0-783	1
-------------------------	-------	-----------	----------------------	-----------	------	------	------	------	------	---------	------	-------	---

New Harmony Waltersburg	Posey	9-5S-14W	E/2 NW SE	2185-2205	37.0	28.4	3.66	4.98	8.05	7-21-59	B.V.	0-767	1
-------------------------	-------	----------	-----------	-----------	------	------	------	------	------	---------	------	-------	---

New Harmony Waltersburg	Posey	9-5S-14W	SE SE SE	2177-2214	36.8	24.5	3.56	4.96	8.05	7-21-59	S.T.	0-782	1
-------------------------	-------	----------	----------	-----------	------	------	------	------	------	---------	------	-------	---

Rochester Waltersburg	Gibson	13-2S-13W	--	1900-1930	37.6	32.5	3.56	4.79	13.98	3-2-61	B.V.	0-950	1
-----------------------	--------	-----------	----	-----------	------	------	------	------	-------	--------	------	-------	---

Rodgers E Waltersburg	Posey	28-4S-13W	NW SW SE	2180-2200	36.4	34.1	4.21	5.85	14.15	2-22-61	B.V.	0-947	1
-----------------------	-------	-----------	----------	-----------	------	------	------	------	-------	---------	------	-------	---

Rumble Hardinsburg	Pike 8-15-8W	SW SE SW	1150-1170	35.6	26.3	4.18	5.80	9.63	2-19-61	B.V.	0-943	1
Welborn Waltersburg	Posey 21-6S-14W	NW SE NW	2120-2130	38.4	33.5	4.56	5.81	10.02	2-22-61	B.V.	0-946	1

* B.V. -- bleeder valve; S.T. -- stock tank; N.D. -- not determined; N.A. -- not available

C -- consolidated (in pool name); center (in location)

Cen -- central

1 Location and depth of pay zone confirmed by operator.

2 Location and depth of pay zone confirmed by Illinois State Geological Survey records.

3 Data from Rees et al. (1943).

REFERENCES

- Armon, W. J., Coburn, A. A., Mast, R. F., and Sherman, C. W., 1964, Physical properties of Illinois crude oil. Part I: Illinois Geol. Survey Illinois Petroleum 78, 53 p.
- ASTM Committee D-2, 1953, Standards on petroleum products and lubricants: Am. Soc. Testing Materials, Philadelphia, p. 153-155, 191-197, 432-434.
- Rees, O. W., Henline, P. W., and Bell, A. H., 1943, Chemical characteristics of Illinois crude oils with a discussion of their geologic occurrence: Illinois Geol. Survey Rept. Inv. 88, 128 p.

Illinois State Geological Survey Illinois Petroleum 81
44 p., 1966

